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M E D I C A L V I R T U E S
O F
A C I D S.

By S A M U E L F A R R, M. D.

Inprimisque hominis est propria veri inquisitio atque investigatio. Itaque cum sumus necessariis negotiisque curis vacui, tum avemus aliquid videre, audire, addiscere; cognitionemque rerum aut occultarum aut admirabilium, ad beate vivendum, necessariam ducimus.

C I C E R O.

L O N D O N:

Printed for T. CADELL (Successor to Mr. MILLAR)
in the Strand.

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INTRODUCTION.

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T has long been disputed
by practitioners in the art
of medicine, to what

particular parts of this science our
attention should be peculiarly di-
rected. Some, fond of reasoning

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and speculation, and pleased with the theories of ingenious and contemplative minds, have imagined a thorough acquaintance with the functions of an animated being, or a just survey and knowledge of the circulating fluids, to be sufficient to guide them through all the difficulties of their profession; and not only to inform them of the seat and causes of disorder, but to indicate the cure, and direct them in the practice by which they are to accomplish it. Others again, despising the use of their rational abilities, because they are ignorant how to employ them, or are too

indolent to attend to their decisions, lay aside the exercise of the noble faculty of reason, and pursue a science, whose end is the most important, by the most ignoble and trifling means. These are such as vest all their knowledge in the experience of particular modes of healing, or of particular medicines: an experience which is oftener misguided than just. The reason of which is obvious: because their first foundation is bad. And when this is the case, altho' the superstructure may be ever so elegant, parts adjusted in the nicest and most exact

proportion, and the whole appear to be complete and perfect, yet, if there be a failing in this essential part, a good architect will pronounce it useless and dangerous. The utility of medicines, however, and forms of prescription, will never be explained away by the injudicious abuse of them by ignorant empiricks, nor by the contempt which some vain theorists may bestow upon them. The more judicious will pay them the just tribute that is due to their merit; and, instead of relinquishing them because their action cannot be explained, will only endeavour

deavour to examine more particularly into their nature. By this means, it is most probable, their use will be best ascertained, and fixed upon a foundation which can never be shaken by fancy, or destroyed by an ill-grounded experience. That every disease has a peculiar remedy amongst the productions of nature, may be a fallacy, which as it was built upon the highest degree of empiricism, must be referred to that source for its authority. But that many natural substances have a very powerful effect upon the human body, is a truth which every

man's perceptions will confirm, and which a rational mind, as it cannot contradict, will endeavour to explain. The action of many of them has been explained, a just and probable cause been assigned to the effects that have been produced by them, and the effects produced by a similar means.—

There are none of greater consequence than the substances which we are desirous of examining in the following treatise. They are not specifics, and for that reason perhaps they have not been sufficiently attended to. They are however very active and very powerful,

ful, and the present practice seems inclined, to advance their merit, and bring them more generally into use. I am afraid, however, their nature is not completely understood: and if that is the case, their use may as easily be destroyed as promoted; and the blind fashion of another age, when warranted by a failure that may proceed from an unjust application, may cast a censure which its advocates will not be able to controvert, may condemn to oblivion those effects which are not supported by a rational practice, and derive the highest ignominy upon

the authors and promoters of it; which the fashion of this age has brought into the highest repute.——I have long thought, therefore, an essay with this intention would tend to confirm the practice which appears so successful, and would most probably perpetuate it: but I could have wished to have seen it executed by a much abler hand, whose success would have been more secure, and whose authority would have confirmed his reasoning. I submit this therefore to the inspection of the public with the greatest diffidence. If what I shall advance

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be true, they will receive more benefit than I shall reputation : if false, I hope it will excite some more important person to correct my errors, and to fix the truth upon its proper foundation.



S E C T. I.

THE nature of the substances which we are at present to examine, is the most simple as well as the most active of any that can be brought under our cognizance.—In an enquiry into the productions of nature, they would be the first that would offer themselves to our inspection.—The most natural and easy division that has been made of bodies by modern chemists, the result of two thousand years employment

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to discover the most pure and the most divested of any other matter, has placed saline bodies in the first rank. And of all these an acid is the basis.

Every one almost is acquainted with the general term, as it brings a sensation to our review with which we are intimately concerned, and as it conveys to us an idea the most distinct and satisfactory. It will be more just however to give a definition of those substances we understand by the name of acids. They may be called then such bodies or substances of the saline kind,

kind, as are sapid, though inodorous with regard to our senses, and affect us with the particular sensation at which we have hinted. With respect to other bodies, they may be said to effervesce or make an ebullition with alkalines, the only other pure species of salt with which we are acquainted; when in a very pure state, they inflame oils and other bodies of that class; they corrode and change into a salt both metallic and earthy substances; and they change the blue juices of vegetables to a red colour. They are of various kinds, which

which differ very much from each other in the substances from which they are extracted, and those in which they are enveloped. We shall not attempt to give any account of that variety of bodies in which they are contained, and which are made to yield them. It will be sufficient for us to point out the grand and leading distinctions that are made between them, the circumstances by which they are presented to us in their greatest simplicity, and the different effects they produce upon our constitution.—It has never as yet been determined, whether na-

ture presents any of them to us in their most simple state. And yet, notwithstanding this, there is hardly an animal or vegetable substance but what is fully replete with them, often produces them by a spontaneous power of their own, and may be made to yield them at pleasure.—The mineral kingdom, indeed, at first view, seems to be entirely barren with regard to them, and exhibit in a natural state little of their appearance. Some of these bodies however yield them more powerfully than any others.—Sulphur, which is more justly ranged amongst inflamm-

flammables, yet still is an inhabitant of the mineral region, has been known to yield almost the whole of its substance into an acid. For Dr. Lewis has shewn, that sixteen ounces of this body has produced fifteen ounces, six drams, of ol. sulph. per campan. so that there remained only two drams of the inflammable principle; which, when combined, discovered by no sensible qualities, any relation to or combination with a substance of this nature.

The general division that has been made of these bodies—is
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into fossil, vegetable, animal; as they are the product of each of these kingdoms.—Of the first sort are the acid of vitriol, the acid of nitre, and the acid of sea-salt.

The acid of vitriol stands foremost in rank because it is the most universal, and perhaps the most powerful.—It is extracted from all vitriols; by which are meant saline bodies composed of this acid and a metal, by distillation; from sulphur, which is an inflammable principle, in great quantity, by a peculiar process; from earths, from water, &c.

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Besides this, it is known to reside in air, in the electrical fluid, in the salt that is produced by vegetables, and in the phosphorus that is made from animal juices.—It is an acid naturally of a fixed kind, and hence does not seem so powerful as that of nitre; but it may be made volatile, and then is highly offensive.—In its natural state, however, when applied to other bodies, if it do not mix and incorporate with them, it corrodes and destroys them. This latter effect it produces upon animals and vegetables, changing the latter to a black colour. When

more dilute, it produces the effects we shall speak of hereafter.

The acid of nitre is produced from bodies that have been originally animal or vegetable, and can hardly be called a native fossil. It is extracted from that body which is called nitre, the product of a soil that is full of putrid substances. This acid is highly volatile, acrid, and offensive. It is not, however, so powerful as that of vitriol. For although it joins with many bodies, and forms a salt of a fixed kind, yet the other will dislodge it

it from almost all of them, and join itself with them.—Notwithstanding this, it has some properties not only peculiar to itself, but by which it exceeds the power of the first we mentioned: the one is exciting inflammation in bodies that are disposed to this effect; and the other may be a more powerful influence over the animal constitution. This seems, however, to depend on its volatility; and if that circumstance could be as certainly produced in the acid of vitriol, it would, most probably, equally exceed it in this as in any other case.

The acid of sea-salt is sometimes produced from substances that are absolutely fossil, and frequently from the relicks of vegetables and animals. However this substance may differ in its production, it is still of one kind, and is so commonly presented to us, that the least idea is sufficient to suggest to us every thing that is required for us to know of its nature and sensible qualities. The acid, that is produced from it, is highly volatile, but much less so than that of nitre. It joins too with fewer substances: there are many metals upon which it has no effect,

as gold, platina, and cobalt; and it never associates with those of the inflammable class. From these circumstances it must be ranked the lowest amongst the fossil acids. Notwithstanding this it is highly different from those of any other tribe, and will hardly bear to be ranked in equality with any of them that we know, but when highly diluted with water.

The specific gravities of the fossil acids, with respect to water, are as follows:—The acid of vitriol as 18 to 10, that of nitre as 15 to 10, and that of sea-salt as

12 to 10. The next kind of acids we shall consider, is the vegetable, or those produced from vegetable substances in a recent state, or, at least, in such an one in which their juices are far from being dissipated.

The acid of vegetables is common almost to all this tribe of beings in some state or other of their existence.—It is, however, of two kinds; either as it composes the natural juices which every substance of this kind contains, or as it is the product of a particular process, in which the

œconomy of the vegetable is by no means concerned.—A vegetable, in the whole habit and procedure of its nature, very much resembles the constitution of an animal being. It is raised from a small seed, tender, weak, and feeble: during its growth, every wind contracts, and every sunshine expands, the tender vessels of which it is framed: when it grows older it gathers greater strength; rises, struggling with these difficulties, to its summit of perfection; and at last yields entirely to their force, and fades and dies away. During the whole of this

progress, however, there is an end to be maintained; and to this purpose such vessels are constituted, and such juices are carried through them, as tend to promote it. Every thing, however, which retards this purpose, must have a contrary effect, and produce something very distinct from what was intended. Thus, for instance, no doubt it was the intention of nature, perfect in all her conceptions, to induce the greatest mildness, softness, and smoothness, in all her productions of this kind.—Beauty is the greatest excellence of an animated person; harmony
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the undoubted effect of melodious sounds; smoothness, and what affects our senses with a mild and agreeable taste, the result of a well-cultivated herb, whose juices are brought nearest to perfection.

—This resides in a principle to which we have given the name of sugar, which always accompanies the highest maturity, and is heightened in proportion to the fewest accidents to which a plant may be exposed. But this saccharine principle is no more necessary to the most perfect state of a vegetable, than an acid is to its formation, and to every degree
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below it.—Every accident, therefore, which checks and retards the growth and well-being, and of consequence depresses this principle of sweetness, must in that proportion exalt its acidity, and yield that substance which is the subject of our present enquiry.—

And as perfect beauty is seldom seen amongst the great variety of animals that is presented to us—so in like manner there are but few plants whose sugar is most perfectly concocted: but acidity is to be met with almost universally. The acid, however, that we meet with, is so much enveloped in
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other matter, that it is always weak and faint, when compared to those of the fossil kind. How far it may be purified and concentrated is uncertain; but it is a desideratum that medical knowledge stands much in need of.—The other acid of vegetables depends upon a process that seems absolutely the reverse of the former. That was owing to a prevention of the active powers of a vegetable tending to perfection and the promotion of its own life and health: this is owing to a resolution of the product of a vegetable, when it is dead and
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lifeless, into its old matter, or the constituent parts of which it was originally formed.—There is no process in nature so curious as that of fermentation. The saccharine principle, which we mentioned before, is not submitted to the action of any vessels which have a kind of animated influence over it. It is collected in large quantity, and there suffered to act upon itself. By this means, for some time, it seems to promote its own powers, and then very suddenly to lose them, and put on a change that is quite the reverse, and return to the nature
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of the first substance with which it set out.—The process of fermentation seems therefore to be no more than resolution, and argues that it is the vital powers of a plant, by continually acting upon it, that is fitted to keep it in its proper state; of which when once it is deprived, its juices lose their force and efficacy, the acid which formed them into perfection is let loose, and collects itself into a distinct mass, and the other parts are dissipated and carried off; or, having no power but when in a mixt state or constituting a sugar, only tend now to blunt the force
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of the active principle which is separated from it. That acid, therefore, which is known by the name of vinegar, may be said to differ very little from what is produced by recent vegetables. It may be in some measure allowed to be more perfect, because, by producing it, the completion of a destined purpose is obtained; whereas the other is formed by a deviation from such an intention, or by the means by which it is effected. It is upon this account that the saccharine principle is more completely destroyed in the one than it is in the other; and

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we are therefore more certain of its use and efficacy.

There is only one other general kind of acid which is worth our notice—and of this we can speak indeed but with very little certainty. There are some animals that have yielded this substance upon distillation, as ants, &c. and we want little proof to maintain that many parts of the animal body, particularly the product of several secretory organs, are capable of an acetous fermentation, in the same manner as vegetables, and hence forming an animal vinegar.

Such a substance, however, is little wanted, and for this reason is seldom produced. But to know that there is such an effect in nature, may lead very far into the knowledge of the action of those animals, or of those parts of animals, which are used in medicine—and may throw a very considerable light upon the nature both of milk, with which we are entirely supported in our younger years, and of the chyle into which all our nutriment is changed before it can contribute to our preservation.

S E C T. II.

HAVING, in the preceding section, observed the variety of bodies from which acids are produced, and examined the general qualities which distinguish them from other matter; let us now enquire a little into those properties by which they are enabled to act upon our bodies, and become the proper subjects of medicinal powers. We have seen them in their greatest purity, as extracted from bodies which re-

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side in the bowels of the earth; and we have seen them more involved in matter, both of the vegetable and animal kind.—They all agree, however, in one distinguishing quality, *viz.* that of acidity; and differ only as this is more or less obstructed in its action. We can, however, by art, and we are obliged always to do it, reduce the power even of that which is exhibited to us in its highest purity, to render it proper to act upon the tender vessels of our frame.—This we do by the simple element of water.—The obstructions, however, which

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are given to its action by the animal or vegetable œconomy are very different from what we effect by art.—And no skill, even of the greatest chemist, has ever been able to produce from a vinegar, or the juice of any vegetable, an acid that shall exactly resemble the vitriolic, the nitrous, or the marine.—Every vegetable and every animal body, enjoys in its composition, another substance, which deserves to be considered here, as joining with its acid principle and rendering it obscure. This substance we call mucilage, or a combination of oil and water.

—It is what, when properly incorporated with that more active principle, forms the sugar which we mentioned before. — But as often as this process fails, the separate substances are suffered to float about, distinct from each other: and although the one may tend indeed, by its mildness and tenacity, to correct the sharpness and acidity of the other; yet it may very probably be supposed, this is done by a mechanical division, rather than by a proper combination or due mixture of the constituent parts; as the case may be supposed to be when they

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form the more perfect saccharine principle. We might imagine upon this account, that it would be a very easy matter, to extract each of these substances from one another, and by this means be able to exhibit them in their separate state, and from hence discover the nature of that acid of which they are composed. This, however, has never been done; neither does it lie within the power of art. We can, indeed, concentrate the acid of vinegar to a very high degree; but then we concentrate, as it were, the mucilage along with it. The

manner of doing it is by congelation: a process which can never effect this purpose. And these bodies are so involved, that distillation can contribute very little to the desired intention.—It is owing then, we may suppose, to a great deficiency in the art, that this is not done. But, as we have the stronger acids ready for every purpose that we could desire, it is hardly thought necessary to invent a new method, from which, if it were ever so accurate and ingenious, we should reap so small an advantage,

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It will be more to our purpose to consider the action of acids, when divested of all other matter; or, however, when they are capable of acting by their distinguishing qualities alone.—But, before we describe the more immediately sensible effects which they produce upon the animal system, it will be worth our attention to take notice of those affections they produce upon the simple fibre as well as the circulating fluids, and from hence deduce their farther efficacy and power.—

Every view we take of an animal body, will exhibit to us a very complicated machine. But yet it will be sufficient for any pathologist to mark out only one distinction here as most necessary to be attended to. This will take in a review, 1st, Of the stamen or fibre of which it consists, to which all our food must be presented, as it is enabled to contribute to our nourishment, upon which many medicines must act, and which constitute the whole of the solid parts of which we are composed. And 2dly, The

circulating or fluid parts, by which all our aliments are dissolved and mixed, the subjects of nutrition conveyed to their destined stations, and all the secretions supported and preserved.

The stamen or fibre, of which our bodies are more immediately composed, is capable, like all other bodies, of a mechanical action, by which it may be elongated or contracted. It is endued, likewise, with a more particular animated action, as it belongs to a being who is endued with a high degree of irritability and sense.

sense. We shall consider the power of acids over the latter in the first place, and then attend a little to the methods by which the former is produced. This action of an animal being is hardly ever spontaneous, but is almost always excited to throw off some offending matter. It is necessary then that every body, that tends to excite such an action, be endowed with a high degree of stimulus or acrimony. We know that acids enjoy this power in the highest degree of any other; and hence much reasoning is not necessary, to convince us that they

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are capable of producing the effect that was proposed.—The action that is excited, in consequence of a stimulus or an irritation, is very particular; in some sense it may be called a contraction; but yet a reaction is produced, which distinguishes it from any mechanical affection. Another particular too is this, that it is not confined to the simple fibre upon which it acts, but extends to a very great distance, and, in consequence of this, may be excited through the whole system.

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The more mechanical effect that acids produce upon our bodies is that of corrugation, by which a simple fibre, to which they are applied, is contracted and shrivelled up, but has no power to expand and dilate itself. This affection is therefore very different from what may be excited upon an animated body, and indeed it is more particularly observed and practised upon the dead than upon the living fibre. The general method, by which this effect is produced, is by an absorption of the fluid parts, which permits the solids to adhere more strictly

strictly to each other. How this can be done, however, by an acid is very uncertain. Part of this theory we must leave till we have considered the power of acids in producing the coagulation of our fluids, upon which this seems in some measure to depend. Another part we may account for, probably, by attraction of the alkaline particles which subsist in every animal body. We know that acids have a strong affection for these. It is no doubt then but that many of them are dissolved in the coherent fluid, and may easily be taken up and destroyed

stroyed by the acid which is applied to them.

We are now to consider the action of these substances upon the fluids of our system.—An effect indeed very singular is observed to be produced by them. This is coagulation, or a power which seems to destroy all kind of moisture, and reduce what before was fluid to a solid coherent mass.—We observed before, that the fibre, or original stamen of our constitution, was endued with a power of sense. Our fluids are far from being possessed of any

such principle. They are inactive, lifeless vehicles, of themselves, fitted only to convey through the constitution what is prepared for its nourishment and preservation.

—The effect then we have mentioned may be produced as well independent of the body as when this fluid is circulating in it. Notwithstanding this, it is a circumstance that is very particular, and deserves to be considered. It is produced not only by acids, but by heat likewise and ardent spirits.—Can we find then any principle in these bodies that shall resemble each other? There is only

only one of which we can speak with any confidence, and that is a very great activity, which they all possess. We have of late been taught to handle the element of fire, and bring it under our cognizance and inspection. And, notwithstanding it is a substance so highly penetrating, active, and subtile, yet we can find from this principle that it resembles many other bodies in nature. In this respect we have discovered a similitude to two of very great consequence. What is the power, however, by which they are enabled to produce this effect is uncertain.

certain. Fire may act, perhaps, by dissipating the watery particles, over which it seems to have a very great influence. Why may not acids have the same power? We have seen them in some instances endued with a high degree of volatility, a property which is not in the least connected with an acid quality. They may join then with an alkaline of the same nature, that is dissolved in the animal fluid, carry it off into the air, and leave only a solid residuum remaining. I am afraid, however, this theory will hardly be consonant to just reasoning:

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we do not see neutral salts so volatile as when they are separate; but the process of nature is very distinct from that of art.—And there are many circumstances that are always to be taken into consideration, before we either determine or condemn. We know that a small degree of heat will sublimate sal-ammoniac, which is a substance of this nature; and we know likewise that acids and oils raise sometimes so great a heat as to burst out into flame. We may either join these two facts then together, and determine upon the first theory; or

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we may abide by the latter, and think that sufficient to account for the whole.—We shall leave it, however, to the judgment of the world, with this wish, that, if it be plausible enough, it may be received by mankind; if false or improbable, it may be corrected and amended by them.

The fluids of our bodies may be either pure and unmixed with any foreign matter, or they may receive from the subjects of nutrition various offensive substances which may tend to corrupt them. They may likewise be circulated

with proper vigour in the original stamina, and thus preserved from dissolution, or these powers cease to exert their due influence over them, and the resolution of their coherent parts may take place.—Under either of these circumstances, putrefaction will be induced, they will be composed of poisonous instead of wholesome particles, and be entirely incapable of performing their proper office.—This effect, however, most frequently obtains in the state of digestion, before they have entered into the system, and have begun to circulate there. Acids
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are peculiarly adapted to correct this degeneracy, and the state in which it first appears is very well fitted to admit of their influence. A volatile alkali is almost always the product of putrid substances, and it is by this body that we especially become acquainted with this effect. An acid is the grand corrector of all alkalines, and it is by this power that it becomes of so much efficacy in this case, and is of such importance in the train of disorders that depend upon this cause.

We have now shewn the action of acids upon the simple fibre, and upon the fluids of our constitution. We shall next endeavour to exhibit their more sensible effects, and deduce their origin from the principles we have already laid down.



S E C T. III.

TH E power of acid substances, as they influence more intimately the constitution of an animal, must be considered in the same order as the foregoing effects were related. We shall first enquire, therefore, into the extent of the power of their IRRITATION.

For a certain evidence of their effect in this method, we need appeal only to common experience

and inspection; and a very little acute or abstruse reasoning will be required to this end.—One of the general and most common effects of stimulating substances upon the body is the exciting a greater impulse in the vessels of which it is composed than is usual or natural. This the action of acids evidently produces. When applied to several of our sensible powers, we perceive them in a very evident manner. When we taste them, we feel at the same time a peculiar glow that does not terminate in the place to which they are applied; it ex-

tends through the whole system, and convinces us of their universal efficacy.—The same effect is often perceived, though perhaps attended with much more important consequences, when applied to the olfactory organs.—They are used in this manner with a medicinal intention, and are often accompanied with apparent success in restoring from deliquiums to sense and vigour. Besides this, acids may be employed as caustics, and have often been used as such when joined with metals, as antimony, &c. How far they relieve pain in these cases is uncertain.

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As a fluid substance they most probably will spread to too great an extent, and occasion a much more considerable inconvenience than what they are intended to remedy.

When acids are introduced into the mouth, not merely to please the palate, or affect the mere organ of sensation that is placed there, but to excite an irritation of a much higher kind, they never fail to produce the end that is proposed.—The cuticle that invests these parts is infinitely more sensible than that of the outward skin.

skin. Hence we see a most copious flow of saliva excited upon such an application, glandular obstructions are easily relieved, and the due tone of the vessels regularly promoted. How well fitted then are they, as a medicine, to resolve tumors that often happen in these places, and to restore not only a due secretion of the saliva, but to dissolve that which is too viscid, and render it pure and uncorrupt, and capable of discharging its destined office. Every accident that may happen to the mouth and fauces, and parts that are appendages to it, down even

as low as the stomach, as they discharge a mucus or saliva, must depend, for a cure, upon the purity of this secretion: for, while it remains corrupt and diseased, no advantage can be expected from the application of any medicines. Acids then act peculiarly upon these parts; they are the chief subjects of the organ of taste, and they tend to correct every thing that shall hinder its perfection. Does not this open a wide field to the practitioner in medicine. There are so many disorders which depend upon a vitiated saliva, so many that might be prevented

vented by a proper attention to its use, and so many which, perhaps, require no other cure than what may be applied to rectify a disease, which, if suffered to lie dormant, like other occurrences of as trifling a nature, often terminate in the worst of consequences.—It is very necessary then that these organs be kept properly stimulated: and the acids may appear a very good remedy for this purpose.—There is one caution, however, which should be attended to, with regard to their use; it is the danger they often threaten to the teeth. These
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bony substances, apparently so firm, and so well adapted to the uses of manducation, are defended by a covering that may be hurt by these medicines. The enamel is certainly of the nature of an earth. Acids very frequently join with such bodies, dissolve them, and convert them into a salt. From hence it happens, that the tooth-ach is often introduced by the use of acids, where they are used in great plenty, and without being properly diluted. There is no maxim so just as this in the practice of physick, that every remedy, if it do not either

ther palliate or cure, introduces a disease equally as fatal as what it was intended to expel. This is the case here: acids are certainly of great benefit to stimulate the salivary glands to their proper exercise; but yet there is a judgment required in their use, which, if not attended to, will introduce an actual disorder, by endeavouring to remove an inconvenience which of itself may be but trifling.—

Let us pursue the action of acid substances to the stomach.—Here we see their influence excited in
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its full extent, and producing effects wonderful in themselves, and very extraordinary in the animal œconomy. Here we see a very active body exerting its power over a very sensible part of the animal constitution, and to whose affection we are constantly attentive.—The sensation of hunger indicates to us, more than any other, the imbecillity of our nature, and is the strongest testimony to convince us that we can no longer subsist than while we enjoy it.—It has been imagined by some very ingenious and learned persons of the present as well

as past ages, that the degeneracy of our food into an acid was the cause of this affection. We shall not endeavour to build any theory upon such an opinion. It is sufficient to shew, that acid bodies create a very strong irritation upon this organ, stimulate to a proper digestion, and are the cause of many affections, which are difficult to be accounted for.

The stomach may be considered as an organ of the most consequence of any in our system. It is therefore endued with the highest sensibility, and is capable of

refusing every thing that is obnoxious to it, and admitting only what is proper and beneficial.—

The power, which it exerts, however, for this purpose, is not confined to itself, a weak and tender membrane. It gives warning of every approaching danger to the whole system, and excites an universal action to expel it.—I hope no one will here think I speak any otherwise than allegorically. I mean only to express, by a lively image, the great sympathy that reigns between the stomach and the rest of the body, particularly the skin, from this cause. It is

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in no case more evident, than upon the application of acids. Experience daily convinces us of this, and we find some stomachs so exceedingly delicate in this respect, that the smallest quantity will affect them, and produce a very powerful diaphoresis. These are the general effects of acids upon this organ. Those that are more particular to its substance, are of equal importance. They excite, by this power, an appetite to food, which may have been lost and depraved, they stimulate to the digestion of the aliments after they are properly prepared, and they

greatly strengthen its general tone, so as to fit it for future usefulness. Besides this, they occasion a greater flow of its natural mucus, by which the food may more properly be dissolved, inveterate obstructions removed and dissipated, and the latent causes of many powerful diseases, eradicated and destroyed. We shall not attempt to deduce from this effect the influence they have in allaying thirst, a remarkable power these substances possess. We must defer this till we explain their use in inflammatory fevers, when we shall have examined the other

general effects produced by them upon this organ.

Acids, when brought as far as the intestines, have very little power by simple irritation. They there meet with a very considerable corrector in the bile, a substance which it is not proper here to examine; but which prevents their efficacy in this respect, except when very redundant and copious, and then they excite great pain, and sometimes prove purgative. At other times, the contrary effect may be produced, and great costiveness be procured.

This is the case in the Colica Pictonum, which often seems to depend on an acid decomposed by the powers of fermentation, and a deficiency of bile to correct it. We have never been able however, to introduce a medicine by these means that shall answer the intended effect. The only means by which we can attempt any thing for this purpose, is by the anus, in the form of glyster. In this method, indeed, acids are said to have a powerful effect, and, given in large quantity, to prove a smart purgative. But they introduce so disagreeable a tenesmus,

that it prohibits their common use. They might however, I should think, be employed with great success in paralytic affections of the bowels. A case which frequently occurs, and is cured with great difficulty.

Let us now enquire, whether these substances are ever taken up by the lacteals in their proper form, circulated through the whole system of blood-vessels, enabled to act upon them in their passage, and stimulate them to an increase of their natural action. It is hardly possible they should

ever produce this effect. There are so many extraneous bodies that they meet with to corrupt them, so much liquid with which they must necessarily be diluted, and so much bile to correct and neutralize them.—In the first place, mixed and blended with a tenacious saliva, they are carried into the stomach, where they meet not only with an additional quantity of the same kind of mucus, but with digested and undigested matter, the relicks of last day's meal, perhaps of animal food, and dissolved in vinous or in ardent spirits.—In the intestines,

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the bilious and pancreatic juices, destroy the power of acidity with which they were distinguished, and convert them into a new substance.—In this form then, and with so much alteration, they are carried into the blood, where they still meet with the same interruption, and are infinitely more diluted than ever.—How then can they be supposed to act upon the fibres of those vessels which are not the most sensible. We must therefore conclude, that their power is seldom or never felt in this part of their course, and that they produce no sensible effect upon
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the vital organs, as these vessels are peculiarly called.

Notwithstanding this decision, however, they are not carried into the system for no purpose. If a new combination be made with them, this may be decomposed; if they are too much diluted, they may be separated from the mass in which they were blended, and collected again in their ancient form, or at least endowed with an equal power. Many of the secretory organs are capable of this process. The blood, laden with various kind of matter, may
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be considered as a vehicle, which carries every particular, that is of use in the system, to its destined place. For this reason it is, we see so great a variety produced from one, which seems to contain the constituent parts of neither.—The law that is instituted for this purpose is very uncertain, and is a point of physiology that has never been settled.—We see it take place, however, with many medicines.—Acids act very peculiarly in this manner. They are no sooner taken into the body, than they often stimulate the kidneys, and occasion a very great flow of urine.

urine. Several other secretions are likewise influenced by them, and their use in affecting the bronchial glands, may be found to be of considerable benefit. We have already intimated something, with respect to their power of raising a diaphoresis, and ascribed it to a sympathetic affection of the stomach with the cuticular pores. The skin may be considered in some measure as a secretory organ, and upon that account they may be said to contribute to the same effect by the means we are at present considering.—And wherever the diaphoresis is kept up, and
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continued for any length of time, we may ascribe this more frequently to be the cause of it.

Let us now attend a little to the more sensible effect of acids upon our constitution, which they seem to exert by their *astringent* quality. We have already seen, that this effect is equally, if not more powerfully produced upon the dead than the living fibre. In consequence of this, it is more easily discerned in an external, than in an internal application.—The lips immediately betray the effects of their influence,
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by a desertion of the vital fluid, and the whole skin appears shrivelled and highly corrugated, when they are applied to it. In some cases, from a long and continued use, the whole sense of the part is destroyed, and rendered incapable of being stimulated by any substances which may enjoy that power. They may, however, be employed with great advantage to medicinal purposes, upon account of this quality. In sprains, &c. they give a tone to vessels which are too much relaxed; in bruises they tend to repel stagnant and corrupted blood, enable it to be circulated through
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the system, and carried off by some secretion; and in tumours, which require a resolution, they may act powerfully in expelling the matter of them, to where there is least resistance.

Although acids, as astringents, exhibit to us very few sensible effects when admitted into the system, yet we may deduce very valuable ones from their power in this respect. When they are given in sufficient quantity, and when the stomach is quite delivered from any noxious matter, they may act upon it in the same manner as upon the
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external cuticle, and by the universal sympathy of this organ with the rest of the system, contribute to that admirable cooling effect, which is so much ascribed to these bodies. This, however, we shall more particularly explain hereafter. Besides this, they may be taken up by the lacteals, circulated through the system, collected by the secretions, and produce there this effect which we are now describing, and, in consequence of that, be useful or prejudicial, according as they are disposed to be acted upon by them.

The

The power of acids in coagulating the blood, is hardly ever perceived in our constitution. They may, however, produce this effect, and be the cause, perhaps, of various polypuses that may be formed in it from their long and too frequent use. When the power of the stomach is so constricted by their use as astringents, as to become insensible to the common nutriment, when these substances are so copious, that a sufficient quantity of bile is not secreted to correct them, and they are the only bodies capable of stimulating the lacteals, they may be carried in

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their proper form into the blood; and though they may circulate there innocently for some time, yet the heart, from which the whole vital principle proceeds, will receive them less diluted; and in consequence of this, they will be enabled in that organ to form these bodies, which are of so much efficacy, in putting a stop to the vital influence.

We have already intimated sufficiently, concerning their power of checking putrefaction, and we need only attend here to the opportunity they enjoy of producing
this

this effect. The stomach seems to be the place where they act principally in this respect. There it is, that the fordid fomes is first generated, and from thence it is, that the whole circulation continually receives an access of new matter. We can hardly imagine, that the general fluid can be acted on any otherwise than by this means, and there is hardly ever a fever produced that does not reign more in this organ, than in any other part. There is one circumstance, however, of putrefaction, even after the whole mass is dissolved, which requires the accession of

acids to every part. This is the
 turgescentcy or rarefaction, which
 takes place in these cases. Here
 it is not sufficient, that good and
 wholesome chyle should be pro-
 vided, the prevailing putrescentcy
 will easily overcome it and con-
 vert it into its own nature. Neither
 is it sufficient, that one organ should
 be kept pure, whilst all the rest are
 tainted and corrupt. When dis-
 orders of this kind then prevail to
 such a degree, we are not to be
 sparing in our application of acids;
 but the largest quantities seem in-
 dicated, both internally, and ex-
 hibited in various manners to the
 whole constitution. S E C T.

S E C T. IV.

WE come now to the most important and most interesting part of our enquiry.—

This is an examination into the different disorders, which may be supposed to receive benefit, from acid substances, when exhibited in the form of medicines.—We have already hinted at their effects in many symptoms, of considerable use; but we shall attempt now a more particular detail of the disorders themselves to which they

belong, and to which they are oftener contingent than necessary.

The variety of disorders that are connected with what we call fever, or a quick pulse, an accession of heat, and uneasiness in different parts of the body, is of such extent, that it will be impossible for us to attend, in such a treatise as this, to every particular. We shall content ourselves, then, with considering fever, as of three kinds, inflammatory, malignant, hectic; and attend to the use of acids, when they are exhibited in each of these types of the disease.

An

An inflammatory fever, arises from a violent action of the vascular system, proceeding either from obstructions induced by viscosity, or from spasms induced by acrimony. In consequence of either of these, the heat of the body is considerably increased, the blood is circulated in a much quicker and more violent manner, the features are often swelled and protruded, and great pain sometimes produced.—The action of acids, is employed to remove each of these symptoms, but in particular is calculated, to assuage the heat, and regulate the too frequent motion.—The manner by which it

produces them is complicated, and rather obscure. It seems to depend, however,

Ist, Upon such a sedative power as arises from a constant constriction. We have already observed the power of acids in this particular, and we have observed that universal sympathy, that reigns between the stomach and the whole system, by which, in some measure, it concurs with every thing that affects this particular part. This constriction, however, is not founded upon astringency alone. We must have recourse to irritation likewise properly to explain

it.—And although it seems an effect directly opposite to what we considered as such, yet a more attentive observation will convince us of its truth. That constriction that arises from astringency, can never extend itself through the system; for it is not the effect of an animated being. The assistance then of such an action, as applies to the truly animal power, must be called in to account for this effect. But how it produces it, raises a difficulty.—All stimulants, when applied to our bodies in a very violent degree, become sedative, and all sedatives in a
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low degree may be considered as stimulating. It has always been difficult to account for the power of sedatives; and opium, the chief of them all, has never admitted of a just theory.—The fact seems to depend upon the great force of the stimulating matter, which overcomes the tone of the fibre, and makes it insensible of that which affects it with a much less. This is not done, however, by a relaxation; the contrary to it, as we mentioned before, is produced, and to this astringency in the present case will greatly contribute, tho' of itself entirely unequal to so

powerful an effect.—The consequence of a violent constriction is always a sense of cold, and the common influence of cold is to produce this circumstance. Besides this, the greater motion of the vascular system, which probably increased the general heat, being taken off, a cooling quality, or rather a delivery from heat, is attributed to these bodies.

2dly, The cooling effect, and particularly what causes the increased motion to subside, may arise from the power of acids, as irritating substances, to remove
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obstructions in the small vessels of our system. These obstructions are oftentimes the cause of inflammatory fevers. We have seen the power of acids over the small vessels particularly of the secretory organs, and we have seen the great sympathy between the stomach and whole body in an universal irritation.

3dly, The influence of acids in the cure of inflammatory fevers, may be derived from their power of correcting putrefaction and the bilious juice.—A fever seldom finds the body, particularly the
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stomach, in proper order; nay, it often derives its source from the imbecillity of this organ.—But after it is once raised, the whole constitution feels its effects, the appetite fails, and the digestive powers are deprived of their office: in consequence of this, the remains of indigested matter become corrupt and putrid, and the bile is collected to no purpose.—If they are suffered to continue in this state without a remedy, they add fuel to the fire, and prevent the action of any medicines, which do not previously take off their offending progress. No medicine
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can be found to answer this better than what is the subject of our present attention. We may give them then for this purpose, in every state of this kind of fever, and there is no doubt, but they will be always found of considerable service.

A putrid or malignant fever derives its origin from a focus of corruption that inhabits the incumbent air, from a degeneracy of our fluids, that is induced by a relaxation and debility of the solid parts, or from corrupt and noisome food that is taken into our stomach.

stomach.—In consequence of this, an universal spasm is raised throughout the system, great heat and motion is occasioned, and restlessness, languor, and often pain, is induced. It enjoys, however, this difference from inflammatory fevers, that it is not built upon strength of fibre, but on the contrary upon debility, and that the fluids, instead of opposing by their density and occasioning obstructions, are weak and dissolved, and can with difficulty be preserved in their proper channels. — Acids, however, are equally fit to act in this as in fevers of the other kind,

kind. By their sedative power they are fitted to resolve spasms, and at the same time to strengthen the fibre. They are to be given, however, not to act upon the stomach only, but upon the whole system, if possible to be carried through the lacteals, and distributed amongst the secretions. When they arrive there, they may produce their proper effect, and they may give a density to the fluid. Their great and most efficacious power, however, is in correcting putrefaction; and from this alone may be derived every other which they are capable of producing.—

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The great difficulty in these cases may be, in the method of exhibiting them. And to this purpose we ought not to delay any means that can possibly be made use of. The strongest acids, given internally, can produce very slender effects when carried beyond the stomach, except in the minutest secretions. They may, however, have been given in too small a quantity; the effects of large doses have not been sufficiently attended to; and the least pure as well as concentrated, have been generally employed. Physicians have commonly contented themselves with vinegar;

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and that in a weak state, as well as small quantity. Half a pint a day has been as much as has been generally exhibited. But how inconsiderable a quantity that is, to correct so large a putrid mass, needs not be told. It is inconceivable, how much, even of the strongest acids, a stomach will bear, when every thing within it tends to correct them : and it is inconceivable, likewise, how small a quantity ever enters, and circulates with the blood, and can possibly contribute to destroy the putrescency of its nature. If fifty drops of spirit of vitriol, are diluted in two ounces
of

of water, there will not be above a five hundredth part, that will enter the subclavian vein at any one time.

We should not decline, then, giving acids in a very large quantity, and very frequently, and try how much every stomach will bear; that we may be certain it has taken, as much as possible it can, before we pronounce, from any vain and foolish theory, that it has received what is sufficient for the purposes we intend. The most probable theory will justify the greatest excess: and many

an ingenious thought has been buried in oblivion, for want of a proper trial.—We are not only to employ acids in this kind of fevers internally : a great probability of success will arise likewise from their external application. They may be used for this purpose, either in cataplasms, in fumigations, or in clysters. They may likewise be exhibited at the nostrils, and by this means not only restore vigor to the neighbouring parts, which are peculiarly depressed, but contribute their share, by a continual absorption, to the general intention over the whole system.

The

The small-pox, though a disorder of a very peculiar kind, different from any other we know, in nature, and as uncertain in its cause and in its origin, has yet some resemblance to the fevers we have just mentioned, by always being accompanied by one or the other of them. It begins with one of the inflammatory kind. Heat, quick pulse, or violent motion of the blood, pains in the head and back, and great sickness, are its concomitant symptoms. It is terminated by one of a more putrid nature, from an absorption of matter, which brings

on a debility of fibre, a general weakness, universal spasms, and convulsions, as proceeding from this cause. Acids, as they are peculiarly indicated, by the nature of the disorder, have been used, and with great success. Their great intention, however, is to reduce the first or eruptive fever, with which it is attended; for the second depends, in a great measure, upon its mildness, or the contrary. It may happen, however, that both may want their assistance: and in that case, we are to attend to the peculiar nature of this secondary fever; and
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join with them those medicines, that are peculiarly indicated in the cure of that, of whose type it partakes. Notwithstanding this, however, they are not to be used indiscriminately, even in this disorder; or intrusted to the hands of ignorance or empiricism. They are always to be considered as medicines of great efficacy; and they may find the body in such a state, as that the use of them will be rather prejudicial than advantageous. This state, I imagine, to be too firm and rigid a fibre, too indolent and dense a fluid, and too languid a circulation. In such a case as

this, although they generally stimulate, yet their dissolving power, in consequence of it, is only in small vessels; and here they may likewise contribute to coagulation, as well as too mechanical a constriction. By these means, that fever, which if once excited, might receive a cure from them, will probably derive its cause from the same source; and the eruption, which depends on the force of the fever, and is lessened only by the permeability of the small vessels, and the freedom of the circulation, will be involved in a matter, from which it cannot easily be discharged;

charged; and although a little retarded in its progress, will at length break out with much greater fury, or fall upon a part which is beyond the reach of art to attack, much less to amend, when injured by so powerful a disease. It is necessary then, that in these cases some deobstruent medicines be used, previous to the administration of these substances; and that these be of a nature considerably powerful to reduce the too great force of the fibre, and in some measure to dissolve the fluid parts.

Every one will see, that in
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this place I allude to the modern practice of inoculation for this loathsome disease ; where we can induce it at pleasure in a sound person, and in some measure prevent its most fatal effects. And we may observe, from what has been said, that ignorant persons are no more fit to be trusted with this art, than with any disease to which the human body is subjected. Varieties of constitution, natural temperament, accustomed habits, or previous disorders, will occasion such a diversity of practice, as can be founded only, on a thorough knowledge of the animal œconomy, and an accurate attention to the

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the first principles of disease.—
 Where the solids are relaxed, and
 have lost their texture, the fluids
 are dissolved and broken down, and
 many functions impaired by long
 and constant disorder; I should
 imagine deobstruents to be highly
 improper, except where obstruc-
 tions are consequently formed:
 and instead of them, the more
 strengthening kinds of medicines
 seem more properly to be indi-
 cated. Every one knows, how-
 ever, that the former practice is
 the basis of the present method;
 and for this reason ricketty, drop-
 sical, and scrophulous children are
 generally

generally rejected, till these disorders are in some measure removed; or a failure in such cases is attributed to the former disease. Acids, however, even in this case, without this previous attention, might perhaps secure success, with the assistance of bark, &c. equally as certain, as the deobstruent method, when administered only to those of sound and hearty constitutions.

The remote causes, from which fevers are induced, may act not only upon the whole system at once, and destroy the entire habit of our constitution; they may at-

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tack particular parts also; and these parts, may likewise receive an injury from bodies, that are incapable of immediately affecting the whole mass of our fluids. In consequence of such attacks, not only an inflammation is produced, but a new kind of matter is created, which admits of the highest degree of putrefaction, or at least of an acrimony equally as powerful. The absorption of this matter, so acrid and stimulating, by veins which are as numerous as every pore, cannot fail of exciting violent action, in every fibre over which it passes, and inducing a fever,

fever, of a peculiar kind, which is generally known by the name of HECTIC. This fever is never continued, but in general recurs at peculiar periods, corresponding to the accession of new matter, in the ulcers, from which it derives its source. In the fullest and most perfect health, we are subject to a disorder of this nature; and every meal of which we partake becomes the occasion of it. Inactive, sluggish, and inert matter, can never become the proper object of our food, because it does not stimulate sufficiently the powers of digestion. It is necessary

then, that a degree of stimulus be added to our aliment, to give it force, and introduce it into our system. This occasions that temporary fever, which every one experiences upon a full meal, which subsides upon its compleat digestion, and recurs again as often as it is repeated. This progress, likewise, is observed by the most powerful hectics; which differs only from the other in the duration and virulence of its nature, the acrimony with which it is endued, and the parts upon which it is exerted. All ulcers are capable of producing this disorder, in the

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extremities of the external parts, as well as in those more internal, and consequently more important. The lungs, however, are its peculiar subject, and where it is most commonly exhibited; we shall, therefore, enter into a more diffuse consideration of the effects of these medicines upon this organ, by examining into the progress of their utility, in the several disorders to which it is liable. When we take into our review, the tender nature of the substance, of which the lungs are composed, the variety of functions they are obliged to perform, and the variety

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of

of accidents to which they are subject, it is surprizing that no more fall a victim to diseases of this organ, than what daily experience evinces. The ravage, however, which is committed by them, is very great. The air, that passes to and fro through the pulmonary vessels, is often replete with the most noxious particles; and the constant circulation of the blood through them, carries with it all the venom, with which that fluid is often infected. Hence it happens, that almost every kind of fever affects them in a very particular manner. This

I accident,

accident, however, is always reputed, rather symptomatical than original; and requires the same cure as was indicated, in the primary disease. Where it begins, however, in their substance, a more direct attention to their functions is pointed out. It puts on, in general, the form of inflammation; and hence requires the cooling regimen in its highest degree. Whether acids, however, are always indicated, is not absolutely determined. The same reasoning will not be so conclusive, we must confess here, as in the cure of fevers of this kind in general.

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As greatly irritating, they may indeed, both by sympathy and immediate application, resolve those obstructions that were the proximate cause of the disease. The fibre, however, in these cases, is often very strong, and the fluids very dense, viscid, and inactive. Acids tend rather to promote these affections, than to remove them; and hence they may prove a greater injury than relief, when the whole business is to be transacted in so small a compass. In a common inflammatory fever, we must not attend merely either to the strength of the fibre, or the

state of the fluid ; because we cannot apply any remedies immediately to them. But in glandular obstructions, an attention to both is highly necessary, because our whole cure is directed in removing that cause, which depends upon their affection. The more relaxing deobstruents, seem therefore, more particularly to be indicated in such cases. And although the cooling effects of acids, may be highly desired and wished for, yet we must delay their too plentiful use, till the blood is more dissolved, and there is some danger of a fever of the more putrid nature succeeding.

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The same may be said of that fever which often precedes hectic, and is dependent upon the state of inflammation, with which the lungs are affected, previous to the production of an ulcer. In such a case as this, I have known acids bring on a violent streightness upon the breath, which could only be removed by evacuations, and medicines of a more relaxing and deobstruent nature.—We are not therefore to be too free with the use of these substances, till we are certain a hectic is produced; and this is known only by colliquation, or the spitting of true pus.—Too

often physicians are mistaken with regard to the nature of this fever, in disorders of the lungs, and imagine every fever that attends a consumption to be truly of this kind. But it is not so; frequently, a quick, trembling, and weak pulse will be observed, where the blood is highly inflamed, and indicates, instead of corroborating anti-hestics, a more plentiful evacuation. A true hectic, seems to be a fever, that attends upon an absorption of noxious matter, which can only arise, where an ulcer is formed; and belongs not to an incipient consumption, but to the
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last and most confirmed state of that disease.

I have thought proper to say so much upon this subject, because the use of acids may be much abused in disorders of this kind, for want of a just knowledge of the œconomy of the organ which is subject to them, and of the true nature of the action of these substances, which are almost universally laid down, as necessary to the cure of diseases of this kind.

Where, indeed, we are certain, that a hectic is truly formed;

where we have watched the progress of an ulcer from its original inflammation ; and an evident dissolution of the fluids is observed, in colliquative sweats and diarrhea, as well as periodical heats and unusual flushings of the face and hands ; there is no doubt, but that the acids are a medicine very well calculated, to remove these symptoms, and perhaps contribute to the cure of the original disease. By their constrictive and sedative quality, they strengthen and corroborate the fibre ; by this means, and perhaps by their power of coagulation, they may in some measure

measure give a density to the fluids ; by their antiseptic power, they may correct the putrid fordes and acrimony of the blood ; by their irritation upon the stomach, they may promote digestion, and fill the body with nutritious and wholesome chyle ; and by their general influence over the skin, from sympathy with this organ, they may correct that unnatural diaphoresis, which proceeds only from relaxation, joined with, or occasioned by, a high degree of acrimony in the circulating fluids. The state, however, of the disease, in which these substances
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are of the greatest use, is a very melancholy one; and the cure will always be very precarious, let us use what methods we please for the purpose. A great deal depends upon the strength of the constitution, and the solidity of the fibre, by which a powerful expectoration must be supported, and the noxious matter, not only purified, but carried off. Acids are in some measure calculated to procure this effect likewise, but not so powerfully as many others, that are ascribed to them. We must therefore seek for some other assistance; and indeed, there are

no disorders that require so much attention, to different and often contradictory symptoms that appear, as those that are attended with hectic fever, or as those that arise in the lungs, the most tender organ of the human frame.

Besides these we mentioned, we often see disorders of this substance, which arise without any state of inflammation, and are dependent upon a secretion of bad matter from the bronchial glands. From this arise asthmas, and the coughs of old people. A viscid tough phlegm is either secreted

secreted by some disorder of the glands, by which they are unfitted to perform their office, or is generated in them by long delay, occasioned by the debility of the fibre, which is not capable to throw it off with proper force, but allows it to accumulate in such quantity, as to become exceeding troublesome, produce the disorders we mentioned, and often to threaten an absolute suffocation. Acids seem by their power of irritation, very well calculated to rectify these inconveniencies, by stimulating the glands to their proper office, and irritating the fibre,

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to discharge an inconvenience, of which it was hardly sensible. This may be done, either by a sympathetic affection with the stomach, where they chiefly act, or by an accumulation of their power in the organ of secretion. They may be used, not only internally for this purpose, but in fumigations, cataplasms, &c. by an external application.

I shall conclude this observation, with an exception to the use of vinegar, unless it is externally, where no other can be employed. Vinegar, or any vegetable acid, we have
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said, is involved in a mucilage, a substance, which may resemble in some measure, the nature of what we are to expel, or at least, in that quality by which it chiefly offends, *viz.* viscosity. The fossil acids, then, are much preferable to the others in this respect. And I would humbly propose to the dispensers of our officinal medicines, a regulation of their oxymels upon this account.—A set of remedies which are often used in these cases, and require a very particular attention to their composition. Besides this, vinegar is not so well qualified to cover the disagreeable

taste of other medicines, with which it is joined in these compositions : and if a dulcified spirit was used, even the oxymel of squills might be made very palatable.

It is a common notion, that diarrheas and dysenteries arise from crude acid juices in the primæ viæ, which corrode and torment their tender fibres, and occasion a dejection of the substances they contain. This is often the case ; but it may be easily discovered by the remote causes from whence they proceed. If these disorders depend, upon a sluggish, inert humour

mour of this nature, from the admission of unripe fruit, or the acid in its natural state, we should certainly beware, of the use of medicines, which may only add fuel to the fire. But if, even in such cases as these, the acid that prevails, is owing to too great a fermentation, of ripe and well digested fruits, the fossil acids may be exhibited to advantage, because they correct all processes of this kind: and this is owing to their power, of destroying the elastic air, that is constantly flying off in such cases, and rendering it more fixed and permanent.—These disorders,

however, very commonly arise from putrefaction, a collection of sordid matter generated in the stomach from unwholesome food, or the procedure of miasmata from the various circumstances that produce them. In such cases as these, then, we can be in no doubt with regard to the application of acids, the great corrector of all kinds of putrefaction. The only difficulty lies in distinguishing the cause from whence they proceed; and this must be determined by a general disposition to putridity, which may easily be perceived, or the prevalence of contagion, which

is readily known. Much mischief has often been done by an inattention to circumstances, which, because they are easy to be obtained, are neglected. This is often the case in diseases of this nature, where the cure ought principally to be directed to the cause from whence they proceed, rather than the symptoms which appear to be most urgent. Acids, besides their influence in correcting putrefaction, if enough of them remains after that office is discharged, have still a further power of irritating the vessels to a discharge of their contents, and
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afterwards of constringing and corroborating their coats. They may be administered then very safely after the first cause is removed; and require only an alteration in the medicines to which they may be joined.

To examine the variety of chronic diseases, with which the body is infested, in order to discover how far they admit of acids for their cure, would be a very laborious task, and might lead us far into the depths of an endless research. It will be sufficient for us, I hope, to mark the general

causes from which they often proceed, and to which the force of acids can be applied. — We have already shewn, that these substances, by their stimulating power, have a very considerable effect in relieving obstructions, where they are derived from a sluggish inactive cause. Every disease, therefore, that admits of such an origin, will allow of such a cure, except where greater inconveniencies are not to be apprehended from their exhibition. There are stages of the dropsy, indeed, which seem to require often assistance from them, because they strengthen

at the same time that they resolve; and yet at other times, when the body is full of water, we can expect little from them till that inconvenience is taken off. Rheumatism and gout are disorders of that nature, that would seem at first sight to indicate them. Experience, however, will convince us, that they are not the most proper remedies in this case: and a just reasoning upon our principles will aid us in destroying any theories built upon such a narrow foundation. The seat of these disorders is where there is a very languid circulation, and often times
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a very rigid fibre, as well as the minutest vessels. The cause of them seems to depend on a violent acrimony acting upon substances that are rather insensible than otherwise; and, therefore, hardly fit to receive any irritation but from bodies that immediately act upon the fibres of them. Sympathy always seems to be established between bodies of a proportionable sensibility. There is nothing analogous to this then can prevail in the instance before us: and to suppose that ever acids can be conveyed to such parts of our system is very difficult to imagine.

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Some, indeed, have thought, that because the chalk-stones produced by the gout partake of the nature of alkaline, that therefore acids were the most proper cure for this disorder. Such reasoners as these, have never considered, that these bodies are the production of an animal process; and that, if we were to seek for a remedy proper to correct them upon these principles, the indication would be the method which would procure an acid in the same manner. Acids, given of themselves, are not the most likely to produce this: and we have already shewn, how

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difficult it is to convey them even into the blood in a pure unmixed state, much less then into that part of the system which circulates only the serous part of this fluid.

The principal use of acids in chronical disorders seems to be required in those that immediately affect the organs of digestion, the stomach, and alimentary canal: with this intention, they correct putrefaction, a redundancy of bile, and strengthen the organ: in consequence of this, they prevent nausea, and take off indigestion
and

and flatulency ; and they restore to proper order the several secretions that are necessary for this purpose. They are, likewise, of considerable use too in stopping hæmorrhages, an effect with which so many disorders are connected. This they do by that surprizing sedative quality with which they are possessed, and by that sympathy which prevails between the stomach and so many different parts of the body.

CONCLUSION.

IT might be expected, and with a great deal of justice, that some experiments and particular cases of disease should be added to the different observations which have been made in this Essay. We must confess, that every theory is defective in its most essential part, that is not built upon matters of fact: but we hope that we have departed very little from those that are already established by the best authority,

thority, in our enumeration of diseases ; and have only undertaken to exercise our rational powers upon, and invest in a plausible theory, what has been the experience of many ages. And from what we have done, all we can hope for, is, that the utility of such medicines as we have considered will be extended as far as the ratio of their action will permit, though never yet brought into practice ; and on the contrary, that they will be prohibited, where they have been employed without a proper foundation.

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